

Analysis of Pesticides in Water and Sediment Under Different Storage Conditions Using Gas Chromatography

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Abstract. This paper describes the process of testing a simple low-solvent method for simultaneously extracting five classes of pesticides (triazines, organophosphates, organochlorines, pyrethroids, and carbamates) from reconstituted water and sediment. This method uses techniques available in most laboratories, namely solid phase extraction (SPE) and sonication in combination with gas chromatography. The recoveries of pesticides ranged from 60 to 120% with the exception of carbaryl, dicofol, and methoxychlor that had higher recoveries. Methods were further tested with pond water and soil samples. The recoveries of pesticides from soil were comparable with those from sediments, while in pond water, recoveries of the organochlorines exceeded 100%. A matrix enhancement effect was suspected to be the cause for the observed elevated recoveries. In order to determine time range and conditions in which the samples can be stored without significant losses, recoveries of pesticides in water and sediment were monitored for 28 days. Water samples were most stable when extracted immediately and stored in SPEs in the freezer. These samples remained stable for up to six weeks in the freezer, whereas sediment samples were stored for a month without a significant decrease in pesticide concentrations.